Agronomic evaluation of a collection of the tropical pasture *Chloris gayana* for year round forage supply in a dry sub-humid environment in Córdoba, Colombia

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Introduction

» Worldwide, about 3,400 million hectares are used for feeding livestock, often on natural or naturalized pastures with seasonal feed shortages mainly due to lack of water.

» In Colombia, as well as in other regions in the tropics, large areas are exposed to extended temporal drought periods, thus feed options overcoming these abiotic challenge are critical for sustainable livestock production.

Methods

» Agronomic evaluation of 19 accessions of *Chloris gayana* obtained from the Genetic Resources Unit of the International Livestock Research Institute (ILRI) in Ethiopia, complemented with two regional checks, *Megathyrsus maximus* cv. Mombasa and *M. maximus* cv. Sabanera. The evaluation was carried out at the Corporación Colombiana de Investigación Agropecuaria (Agrosavia) research station in Turipaná, Córdoba.

» Data was collected for 18 months between 2016 and 2017, including periods of maximum and minimum rainfall.

» Plots were 9m^2, with three replications and a cutting interval of 6 weeks.

» Variables measures included: Dry matter (DM) production and forage quality crude protein (CP), *in vitro* dry matter digestibility (IVDMD), neutral detergent fiber (NDF) and acid detergent fiber(ADF); data on the latter two are not presented.

Results

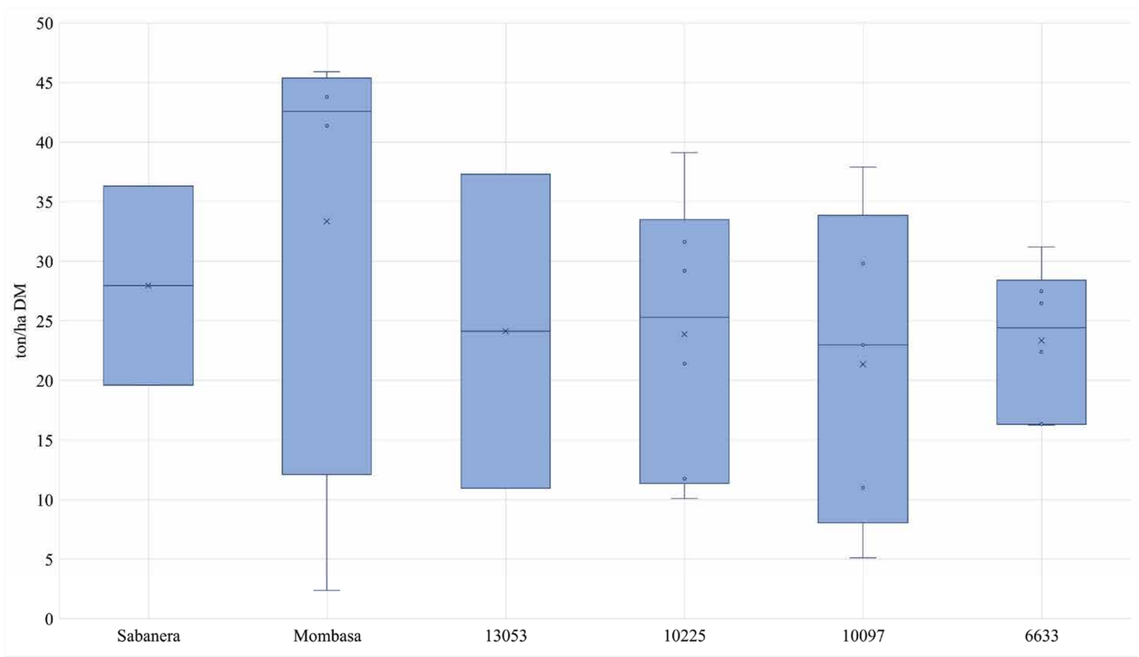

Figure 1. Dry matter production of best-performing *C. gayana* accessions and the two checks in minimum rainfall season.

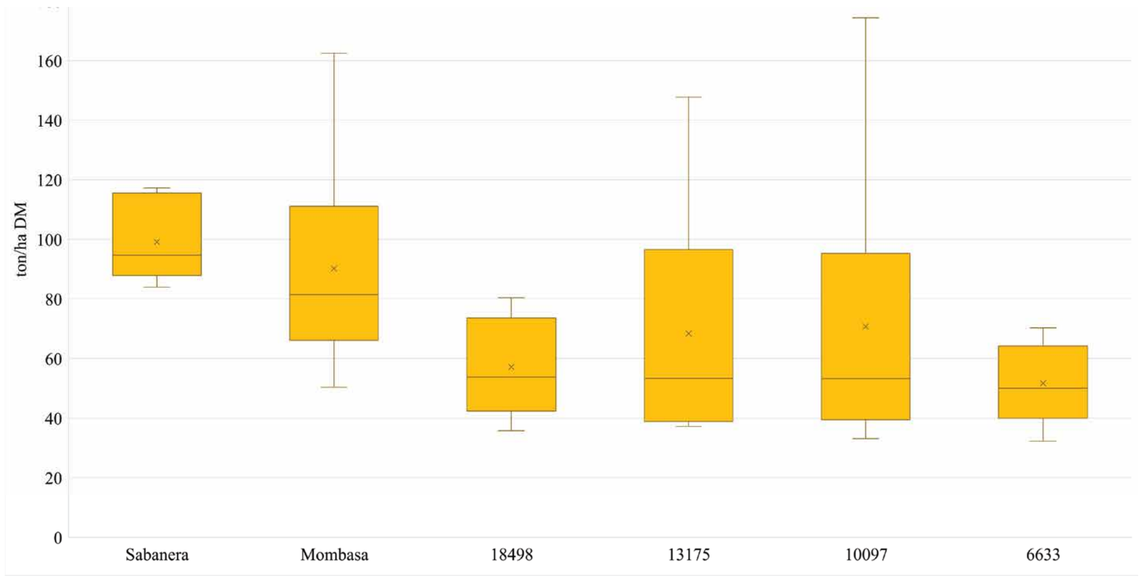

Figure 2. Dry matter production of best-performing *C. gayana* accessions and the two checks in maximum rainfall season.

Forage production:

» Biomass production for the 19 accessions evaluated oscillated between 42.7–79.1 ton DM ha^{-1} during the season of maximum rainfall, with accessions ILRI 13053, 10225, 6633 and 10097 having the highest yield.

» For the season of minimum rainfall values ranged between 5.8 and 24.1 ton DM ha^{-1}, with accessions ILRI 18498, 6633, 10097 and 13175 performing best.

» The controls (Sabanera and Mombasa) produced 90.2–99.1 ton DM ha^{-1} and 33.1–33.3 ton DM ha^{-1} during periods of maximum and minimum rainfall, respectively.

Forage nutritional quality:

» Crude protein content of the *C. gayana* accessions ranged between 7.9–8.1%, with controls having a CP between 5.8–7.2%.

» For IVDMD *C. gayana* varied between 53.9–54.8%, with controls reaching 53.4–54%.

Conclusions

» Although biomass production of the *Chloris gayana* accessions evaluated was lower than the one observed on the regional checks, this alternative species is important to increase germplasm diversity in pastures for proper cattle feeding in regions with extended drought periods.

» *Chloris gayana* is a suitable forage pasture alternative for the humid tropics were livestock production is important (e.g. Córdoba, Colombia), in particular in view of its superior CP content and digestibility when compared to regional checks.

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